

REMARKS

The misnumbering is regretted. The Examiner's renumbering of the claims is appreciated.

Claims 102 and 104 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,448,529 to Krause in view of U.S. Patent 3,922,092 to van den Bosch. The rejected claims have been amended and the rejection is traversed in so far as it is applied to the claims as amended.

Claim 102 requires that at least two spatial components of the extended source be imaged to at least two corresponding images along an encoding axis on an encoding plane. This is not true in Krause. Rather than focusing at least two spatial components to at least two corresponding images, the optics of Krause disperses a single spatial component from aperture 25 by means of a prism or grating 19 by refraction or diffraction into a number of spectral components shown as I, II and III in Figs. 1 and 3 of Krause.

Furthermore, the spatial components of claim 102 are independently modulated with corresponding radiation filters having different modulation functions to provide an encoded beam comprising at least two encoded spatial components as the modulator is rotated about a rotation axis. In contrast, as shown in Fig. 1, Krause modulates all three wavelength components I, II and III by means of a common modulator producing the same modulation function having a changing or sweeping frequency.

Furthermore, the filters of claim 102 are located at different radii from said rotation axis, and occupy distinct annular regions. Such features are absent in Krause.

The differences above illustrate the fact that the invention of the system of claim 102 is fundamentally different from that of Krause. As clearly explained in the embodiment described in the present application from page 34, line 4 through page 36, line 8 in reference to Figs. 15A-15C, the system of claim 102 enables analysis of spatial properties of an extended

source, such as a collection of different samples. The extended source has at least two spatial components (e.g. at least two samples). In the embodiment of Figs. 15A-15C, the two spatial components originate from two different portions S1 and S2 of a source. Radiation emitted by the two portions S1 and S2 are focused onto two different images, S1' and S2', respectively, along an encoding axis which is along the radial axis of the modulator. The modulator has a number of radiation filters with different modulation functions. These spatial components are modulated by means of corresponding filters with different modulation functions to provide an encoded beam. Even in the embodiment where the multiple encoded spatial components are detected simultaneously by a single detector, it is possible to identify separately the encoded spatial components in order to analyse the properties of the extended radiation source.

Krause, on the other hand, is directed to spectral analysis of a radiation beam. For this reason, the single radiation beam is split into its respective spectral components, which are modulated before detection.

From the above, it is clear that this system designed by Krause is totally different and essentially irrelevant with respect to the invention of claim 102.

The Examiner is apparently of the opinion that Krause teaches everything in claim 102 except that Krause differs from claim 102 in that the modulator does not include individual filter elements, but that van den Bosch discloses the use of filters in a rotating chopper disk and that it would have been obvious "to include filters as a means to insure that the light is correctly separated." Page 3, line 7-8 of the Office Action. We disagree.

As noted above, Krause fails to disclose at least two key elements of claim 102 and Krause is totally different and essentially irrelevant is so far as the system of claim 102 is concerned. Van den Bosch also fails to teach or suggest the above-noted features absent from Krause, and therefore also fails to remedy the deficiencies of Krause.

Furthermore, it is noted that the filters disclosed by van den Bosch are very different from those of Krause so that there would be no reason or motivation to modify Krause by replacing the modulator 11 by the filters of van den Bosch. As shown in Fig. 3, Krause uses a "splitting means 19" that is "constructed as a grating or prism" to separate light into wavelength components I, II and III. The modulator 11 of Krause modulates the intensities of the spectral components I, II and III after separation by splitting means 19, and therefore do not modulate according to the wavelength of the components. The filters of van den Bosch, on the other hand, are optical bandpass filters that filter radiation by selectively transmitting specific wavelengths of radiation. Such filters are radically different from and have nothing to do with the function of modulator 11 of Krause. For this reason, there would be no reason or motivation to replace the modulator 11 of Krause by the filters of van den Bosch. Thus, the purpose of modulator 11 of Krause is not to actually separate the light into spectral components and the reason quoted above from the office action simply does not apply, since the purpose of modulator 11 of Krause is not intended to be used for separating light into its wavelength components.

Furthermore, it is noted from Col 5, lines 15-20 of van den Bosch that identical interference filters are employed in apertures 24, 26 and 28, so that presumably, they have identical effects on radiation. And even if one were to combine van den Bosch with Krause as urged by the Examiner, the combination would still fail to teach or suggest the filters of claims 102 where the filters occupy distinct annular regions and modulate corresponding spatial components with different modulation functions.

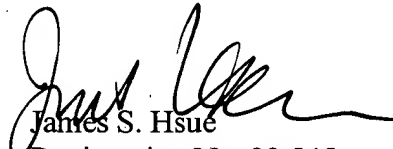
From the above, it is believed that claim 102 is allowable over U.S. Patent 4,448,529 to Krause in view of U.S. Patent 3,922,092 to van den Bosch, and all other art of record. Claim 104 is believed to be allowable for the same reasons.

Claims 127 and 128 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 3,811,777 to Chance. The two rejected claims together with claim 129 have been cancelled to expedite the examination of the application. However, we retain the right to file a continuation application with respect to the subject matter of claims 127-129.

Claims 102-126, 130 and 131 are rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-14 of U.S. Patent No. 6,338,794. Attached is a terminal disclaimer referring to U.S. Patent No. 6,338,794. The double patenting rejection is therefore believed to have been overcome.

Claims 102-126, 130 and 131 are presently pending in the application. Reconsideration of rejections is respectfully requested and an early indication of the allowability of all the claims is earnestly solicited.

Respectfully submitted,

  
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